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THE ORIGIN OF SECONDARY DORMANT BUDS IN DECIDUOUS FRUIT TREES

BY

BRUNO HAHNE

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THE ORIGIN OF SECONDARY DORMANT BUDS IN DECIDUOUS FRUIT TREES

BY

BRUNO HAHNE

In the course of a microchemical study of seasonal fluctuations of the reserve foods in the pear tree,[1] the sectioning of nodes for the purpose of studying bud pith and bud meristem tissues in branches two or more years old brought to light the following interesting fact, hitherto, apparently, unobserved. The bud pith, added to each year by an amount of tissue more or less equal in length to the radial increment of the growth ring, thus keeping the bud meristem at the surface of the wood, is capable of branching during or after the second year. In consequence, two or more dormant buds may be present at the surface where only one originally existed. This is clearly on plate 11, figure 1, where two branches of the bud pith with their origin in the second year's growth ring have spread outward so that a lateral bud occurs at the cambium on each side of the original dormant bud and at some distance from it. Plate 11, figure 2, also shows a similar secondary bud, having its inception in this case within the wood of the third year. This particular branch of the bud pith has actually pushed itself some distance past the cambium into the phloem region where the bud meristem is clearly visible at its terminus.

Chandler,[2] studying dormant buds on Baldwin apple trees at Cornell University in 1920, found that when these were removed there was a tendency for new shoots to arise close to the original site but never more than three-sixteenths of an inch from its center. He says: ''This observation suggests either that the tissue around a bud . . . more readily forms adventitious buds than does other tissue or that there are in the tissue around dormant buds . . . very small dormant buds that grew in the axils of the scales of the principal bud.'' The second alternative seems to be the correct one for it is clear that, in the pear tree at any rate, meristematic tissue need not arise *de novo* to produce such shoots, and Chandler states that in his experience none started from scars elsewhere. In fact, if the original bud should happen to be multiple when formed, the smaller lateral dormant buds would actually be of the same age as the central one. If, on the other hand, they were secondary buds formed in the axils of bud-scales, they might be of any age up to that of the original bud. They were never found to occur above or below the central bud in radial sections but always laterally to it, in the transverse plane.

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[1] Hahne, B., A microchemical study of seasonal fluctuations of the reserve foods in the pear tree. MS. It is planned to publish this paper in an early issue of *Hilgardia*.

[2] Chandler, W. H., Fruit Growing (Houghton Mifflin Co., 1925), pp. 18–19, 41.

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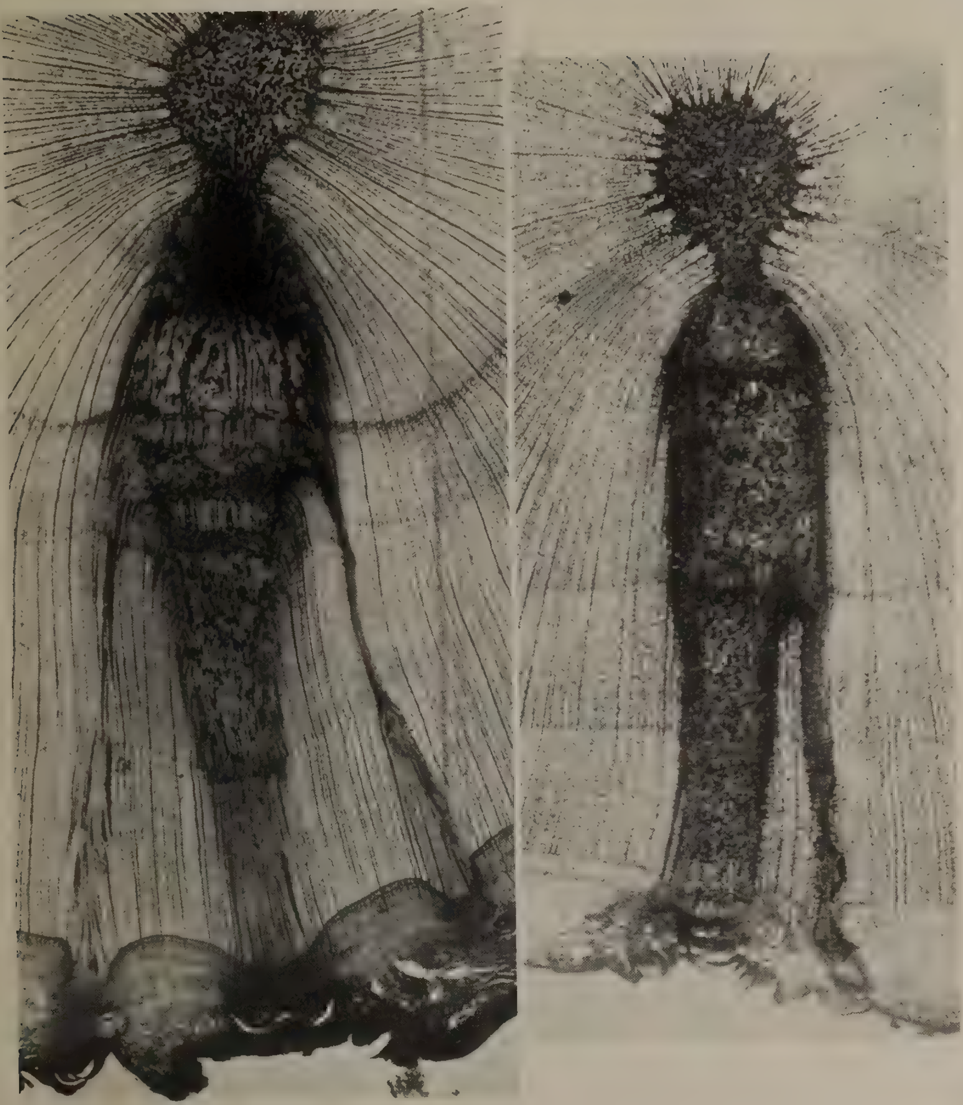

Fig. 1 Fig. 2

Plate 11, figure 1, shows material collected at Davis, California, April 1, 1923, and treated with osmic acid to make plain the fatty substances. Figure 2 shows material collected from the same tree, December 2, 1923, and treated with iodine potassium iodide in order to determine the starch content. Both sections were cut from six-year-old branches of a large pear tree.

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325-331. December, 1920

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